

REMARKS

Claims 17-53 are pending in this application. Claims 17, 18, 20, 22, 24, 28-32, 34, 36, 38, 42, 44, 46, 50, 51 have been changed by this amendment to provide additional clarity.

Applicant has noted from the Office Action Summary that the Examiner has considered the five IDS's submitted by Applicant. Only copies from the Paper #7, however, were included with the Final Office Action mailed 2/28/01. Applicant requests copies of the initialed Form 1449 of Paper Nos. 11, 12, 14, and 15.

The Examiner is requested to update the correspondence address as indicated in the attached form.

The Examiner rejected claims 17-53 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains to make and/or use the invention. The Examiner stated that claims 17 and 30 recite limitations not disclosed in the specification. Specifically, the Examiner stated that the limitation of a "sensor provided within said housing that tracks the motion of the housing" is not disclosed in the specification. As stated in the previous Amendment, Applicant believes this limitation is disclosed, for example, on page 1, lines 12-13, page 3, lines 31-32 and page 4, lines 1-3, and Fig. 4. However, to expedite prosecution, Applicant has amended the language in claims 17-53 to recite a "tracking element" instead of "sensor," where the term "tracking" is used throughout the specification. The Examiner also stated that the limitation of "an actuator including within and coupled to said housing" is not disclosed; Applicant believes this limitation is disclosed in the specification as explained in the previous Amendment. However, to expedite prosecution, Applicant has amended the claims to recite a "movement generator" instead of an "actuator," as used on page 4, lines 12-14, to be more in accordance with the language used in the specification. In view of the foregoing, Applicant believes that claims 17-53 are patentable, and respectfully requests that the rejection under 112, first paragraph, be withdrawn.

The Examiner rejected claims 17 and 30 under 35 U.S.C. 102(e) as being anticipated by Rohen. Applicant respectfully traverses. Rohen discloses a mouse having a small tactile feedback area 33 (Figs. 2-4). In one embodiment, the feedback to the user is a mild AC signal to provide a tingling sensation at the finger of the user. This device does not generate motion of the mouse housing, nor provide motion in an orthogonal direction, as recited by Applicant in claim 17. In another embodiment, the Rohen feedback is a vibration that varies in intensity and/or frequency from a voice coil loudspeaker device. However, only the small tactile feedback area

33 is moved, not the housing of the mouse as recited by Applicant in claim 17. Thus, a greater portion of the mouse is moved by Applicant (the palm-contacted housing), allowing a greater and more compelling tactile effect to be provided to the user through the user's palm, as compared to the small area of Rohen that is only contacted by the user's fingertips. Furthermore, the small area 33 is located on the side of the mouse, thus providing vibrations in a direction parallel to the x-y motion of the mouse and to the surface on the which the mouse rests. Applicant's claim 17 recites generating motion of the housing in a direction substantially orthogonal to the flat surface on which the mouse moves, thus providing forces that do not interfere with the x-y motion of the mouse and do not interfere with the user's control of the cursor. For these reasons, Applicant believes claim 17 is patentable over Rohen. Claims 18-29 are dependent from claim 17 and are believed patentable for at least the same reasons and for additional reasons.


Claims 30-42 recite a computer mouse including elements similar to those recited in claims 17-29, and are believed patentable at least for similar reasons. Claims 43-53 recite a method for providing tactile feedback to a user of a mouse device which is believed patentable for at least reasons similar to claim 17 as explained above.

The Examiner rejected claims 24 and 38 under 35 U.S.C. 103(a) as being unpatentable over Rohen in view of Affinito et al. Affinito et al. do not disclose the features of moving the mouse housing that provides sensations to the user's palm, nor the orthogonal direction of motion, so that claims 24 and 38 are believed patentable for reasons similar to their respective parent claims. Applicant respectfully requests that the rejection under 103(a) be withdrawn.

No amendment made herein was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless Applicant has argued herein that such amendment was made to distinguish over a particular reference or combination of references.

Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,



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MARKED-UP VERSION OF AMENDMENTS

17. (amended) A computer mouse device for tracking user input and providing tactile feedback, said mouse device comprising:

a housing designed to move over a separate flat surface, said housing designed to be engaged by a palm of a user's hand when said housing is in contact with said flat surface;

a [sensor device] tracking element provided within said housing that tracks the motion of said housing in x- and y-directions with respect to said flat surface, wherein motion data from said [sensor] tracking element is transmitted to a host computer for updating the status of a cursor on a graphical display displaying one or more graphical details;

signal lines connecting said mouse device with said host computer, wherein said mouse device receives over said signal lines a sensory feedback signal from said host computer when said cursor displayed on said host computer interacts with one of said graphical details in response to said motion data; and

[an actuator] a movement generator included within and coupled to said housing, said [actuator] movement generator generating motion of said housing in a direction substantially orthogonal to said flat surface, thereby delivering a tactile sensation to said user's palm when said palm is in contact with said housing, said [actuator] movement generator delivering said tactile sensation in response to said sensory feedback signal received over said signal lines.

18. (amended) A computer mouse device as recited in claim 17, wherein said [actuator] movement generator is capable of generating vibrations of varying frequency corresponding to different graphical details on said graphical display.

19. A computer mouse device as recited in claim 17 wherein said sensory feedback signal conveys a particular vibration frequency by a coding of pulse sequences.

20. (amended) A computer mouse device as recited in claim 17 wherein said [actuator] movement generator generates said motion in said entire housing of said computer mouse device.

21. A computer mouse device as recited in claim 20 further comprising a resilient material, said resilient material enabling said vibration by storing and releasing energy.

22. (amended) A computer mouse device as recited in claim 17 wherein said housing includes a casing portion and a lower portion, wherein said [actuator] movement generator generates said motion in said casing portion with respect to said lower portion.

23. A computer mouse device as recited in claim 22 further comprising a resilient material, said resilient material being located within said housing between said casing portion and said lower portion.

24. (amended) A computer mouse device as recited in claim 17 wherein said [actuator] movement generator is an electromagnetic actuator.

25. A computer mouse device as recited in claim 17 wherein at least one of said graphical details is a border of a window.

26. A computer mouse device as recited in claim 17 wherein at least one of said graphical details is an icon.

27. A computer mouse device as recited in claim 17 wherein different graphical details are coded with different vibration frequencies so that a user can identify said graphical details by vibration frequency.

28. (amended) A computer mouse device as recited in claim 17 wherein said [actuator] movement generator generates motion of said housing by impacting said housing with a moving portion of said [actuator] movement generator.

29. (amended) A computer mouse device as recited in claim 28 wherein said [actuator] movement generator impacts said housing at a location underneath said palm of said user when said palm contacts said housing.

30. (amended) A computer mouse device for tracking user input and providing tactile feedback, said mouse device comprising:

a housing including a lower portion and an upper portion, said lower portion designed to move over a separate flat surface, said upper portion designed to be engaged by the palm of a user when said lower portion is in contact with said flat surface;

a [sensor] tracking element provided within said housing for tracking motion of said housing with respect to said flat surface, wherein motion data from said [sensor] tracking element is transmitted to a host computer for updating the status of a cursor on a graphical display containing one or more graphical details;

signal lines connecting said mouse device with said host computer, wherein said mouse device receives over said signal lines a sensory feedback signal from said host computer when said cursor displayed on said host computer interacts with one of said graphical details in response to said motion data; and

[an actuator] a movement generator included within and coupled to said housing for generating up-down motion of said housing with respect to said flat surface, thereby delivering a bump sensation to said user's palm when said palm is in contact with said housing, said [actuator] movement generator delivering said bump sensation in response to said sensory feedback signal received over said signal lines.

31. (amended) A computer mouse device as recited in claim 30, wherein said [actuator] movement generator is capable of generating bump sensations of varying magnitude corresponding to different graphical details on said host computer's graphical display.

32. (amended) A computer mouse device as recited in claim 30, wherein said [actuator] movement generator is capable of generating vibrations of varying frequency corresponding to different graphical details on said host computer's graphical display.

33. A computer mouse device as recited in claim 30 wherein said sensory feedback signal conveys a particular vibration frequency by a coding of pulse sequences.

34. (amended) A computer mouse device as recited in claim 30 wherein said [actuator] movement generator generates said motion in said entire housing of said computer mouse device.

35. A computer mouse device as recited in claim 34 further comprising a resilient material, said resilient material enabling said vibration by storing and releasing energy.

36. (amended) A computer mouse device as recited in claim 30 wherein said [actuator] movement generator generates said motion in said upper portion with respect to said lower portion.

37. A computer mouse device as recited in claim 36 further comprising a resilient element, said resilient element being located within said housing between said upper portion and said lower portion.

38. (amended) A computer mouse device as recited in claim 30 wherein said [actuator] movement generator includes electromagnets [is an electromagnetic actuator].

39. A computer mouse device as recited in claim 30 wherein at least one of said graphical details is a border of a window.

40. A computer mouse device as recited in claim 30 wherein at least one of said graphical details is an icon.

41. A computer mouse device as recited in claim 30 wherein different graphical details are coded with different vibration frequencies so that a user can identify graphical details by vibration frequency.

42. (amended) A computer mouse device as recited in claim 30 wherein said [actuator] movement generator generates motion of said upper portion by impacting said upper portion with a moving portion of said [actuator] movement generator.

43. A method for providing tactile feedback to a user of a mouse device in communication with a host computer, the method comprising:

providing motion signals to said host computer from said mouse device, wherein said motion signals represent motion of said mouse device on a flat surface;

receiving on said mouse device a sensory feedback signal from said host computer over signal lines, said sensory feedback signal being sent by said host computer when a cursor displayed on said host computer interacts with a graphical detail in response to said motion signals; and

generating a movement of a casing portion of said mouse device with respect to a bottom portion of said mouse device in response to said received sensory feedback signal, said movement being in a direction substantially orthogonal to said flat surface, said movement delivering a tactile sensation to said user's palm when said palm is in contact with said casing portion.

44. (amended) A method as recited in claim 43 wherein [said actuator] a movement generator generates vibrations of varying frequency corresponding to different graphical details on said graphical display.

45. A method as recited in claim 43 wherein said sensory feedback signal conveys a particular vibration frequency by a coding of pulse sequences.

46. (amended) A method as recited in claim 43 wherein said movement of said casing portion is generated by a movement generator including electromagnets [actuator is an electromagnetic actuator].

47. A method as recited in claim 43 wherein at least one of said graphical details is a border of a window.

48. A method as recited in claim 43 wherein at least one of said graphical details is an icon.

49. A method as recited in claim 43 wherein different graphical details are coded with different vibration frequencies so that a user can identify graphical details by vibration frequency.

50. (amended) A method as recited in claim 43 wherein [said actuator] a movement generator generates movement of said casing portion by impacting said casing portion with a moving portion of said [actuator] movement generator.

51. (amended) A method as recited in claim 50 wherein said [actuator] movement generator impacts said casing portion at a location underneath said palm of said user when said palm contacts said casing portion.

52. A method as recited in claim 43 wherein said movement of said casing portion includes a slanting of said casing portion in one direction with respect to said bottom portion.

53. A method as recited in claim 43 wherein the cursor can be positioned within the borders of one of said graphical details, wherein said cursor is caused to remain within said borders until said cursor is released by said user pressingdown said casing portion of said mouse device.